**Table S1.** Sampling schedule for different locations within Passaúna Reservoir (top row, see map in Fig. 1). Symbols mark sample collection for laboratory analyses (circles) and in-situ measurements using sensors (squares) conducted at the different locations at specific sampling dates (first column). Each color represents one parameter as described in the legend at the end of the table. The numbers at the right hand side of the symbols are the sampled water depths in meters. The three extensive sampling campaigns are marked by star-shaped symbols in the first column.

	Inflow	Forebay UP	Forebay	Ferraria Bridge	PPA	Park	Reservoir Center	Intake	Dam
☆ 21 Feb 2018	●●● ■■	●●● ■■ 0.2	●●● ■■ 0.2 1.0 2.0	●●● ■■ 1.0 2.0 3.0	●●● ■■ 0.2	●●● ■■ 0.2 3.0 5.0 6.0	■ 0.2 7.0 9.0	●●● ■■ 0.2 6.0 9.0 11.0	●●● ■■ 0.2 2.0 5.0 10.0 14.0
03 Apr 2018	●●● ■■							●●● ■■ 0.2 1.5 4.0 10.0	
24 Apr 2018								● ■■ 0.2 0.7 2.0 4.0 7.0 10.0 12.0	
08 May 2018	●●● ■■■							●●● ■■■ 0.2 1.5 6.0 10.0 12.0	
12 Jun 2018	●●● ■■■■			●●● ■■■■ 0.2 2.0				●●● ■■■■ 0.2 1.5 6.0 12.0	
☆ 13 Aug 2018	●●● ■■■■	●●● ■■■■ 0.2	●●● ■■■■ 0.2 1.0	●●● ■■■■ 0.2 1.0 2.0	●●● ■■■■ 0.2 1.0 2.0	●●● ■■■■ 0.2 3.0 6.0	●●● ■■■■ 0.2 4.0 8.0	●●● ■■■■ 0.2 4.0 8.0 10.0	●●● ■■■■ 0.2 4.0 8.0 13.0
24 Oct 2018	●● ■■■■		●●● ■■■■ 0.2	●● ■■■■ 0.2 2.5	●● ■■■■ 0.2 2.5	■■■■ 0.2 1.5 4.0 6.0 8.0		●● ■■■■ 0.2 1.5 10	■■■■ 0.2 4.0 6.5 11.0 15.0
20 Nov 2018	●● ■■■■		●● ■■■■ 0.2	●● ■■■■ 0.2 2.5	●● ■■■■ 0.2 2.0	■■■■ 0.2 4.0 6.0 7.0	■■■■ 0.2 4.0 6.0 8.0	●●● ■■■■ 0.2 1.5 10.0	■■■■ 0.2 4.0 7.0 12.0 15.0
11 Dec 2018	●● ■■■■		●● ■■■■ 0.2	●● ■■■■ 0.2 2.5	●● ■■■■ 0.2 1.5	■■■■ 0.2 3.0 7.0	■■■■ 0.2 3.0 8.0	●● ■■■■ 0.2 1.5 10.0	■■■■ 0.2 3.0 8.0 13.0

☆ 05 Feb 2018	●●● ■■■	●●● 0.2 ■	●●● 0.2 ■■■	●●● 0.2 ■■■■ 2.0	●●● 0.2 ■■■■ 2.5	●●● 0.2 ■■■■ 3.0 7.0	●●● 0.2 ■■■■ 3.0 9.0	●●● 0.2 ■■■■ 2.5 7.0 10.0	●●● 0.2 ■■■■ 6.0 10.0 14.0

| Legend	Sensors
Water samples	■: chlorophyll-a
●: chlorophyll-a	■: dissolved oxygen
●: nitrogen series (N-NO$_3$, N-NH$_4$, TN)	■: temperature
●: phosphorus series (P-PO$_4$, TP)	■: N-NO$_3$
	☆: extensive campaign
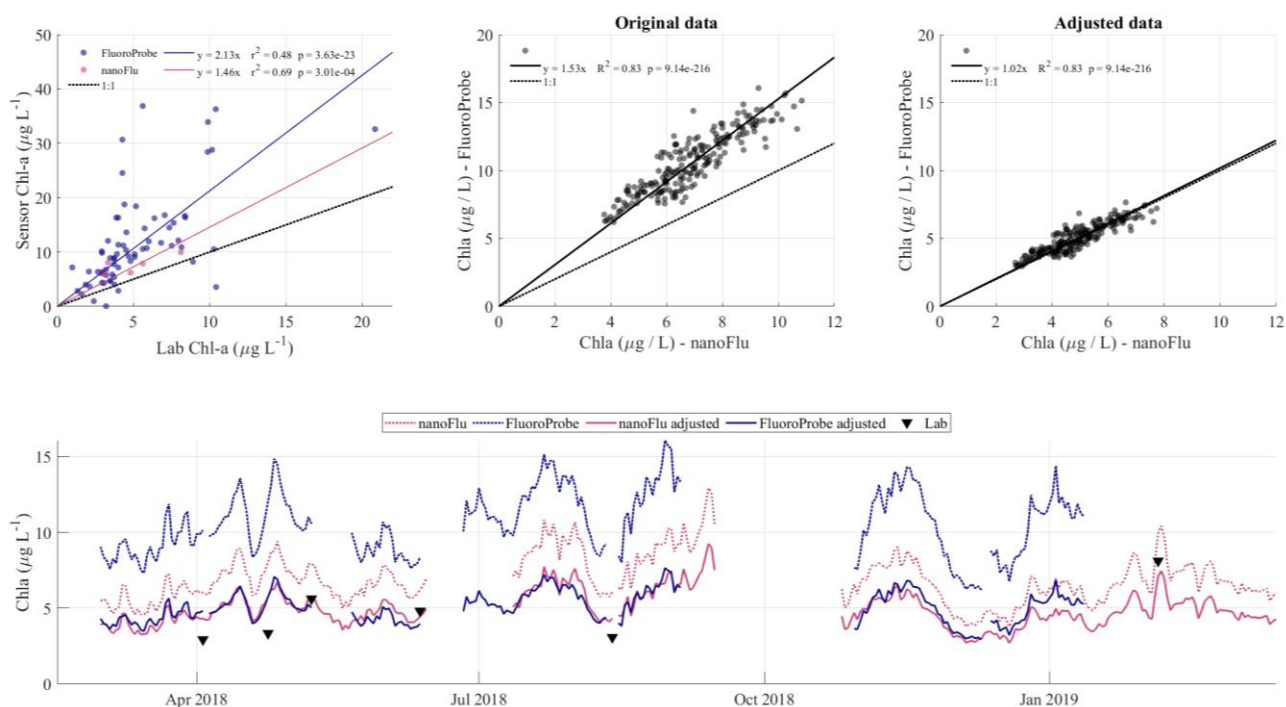
Figure S1. (a) Linear regression between chlorophyll-a estimated by sensors measurements (nanoFlu and FluoroProbe) versus laboratorial analysis. (b) Linear regression of chlorphyll-a measured by the two sensors, FluroProbe vs nanoFlu using their factory calibration. (c) Linear regression between concentrations of chlorophyll-a measured by the two sensors after calibrations using the regression equations shown in (a). (d) Time series of chlorhophyll-a by sensors (with and without custom calibration) and laboratorial analysis (black symbols).
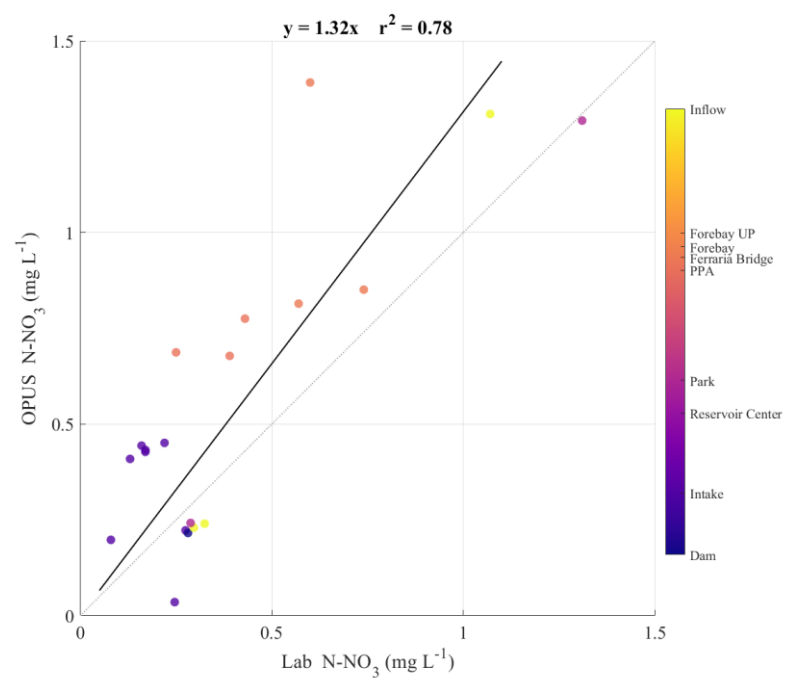
Figure S2. Dissolved nitrate (N-NO3) concentration obtained from laboratory analysis versus measurements by the optical sensor (OPUS). Colored symbols show measurements from different locations along the reservoir according to the colorbar (see Fig. 1 for locations of the sampling sites). The gray dotted line is the 1:1 relationship, and the black continuous line is the linear regression between the two data sets, slope coefficient and coefficient of determination are presented at the title.
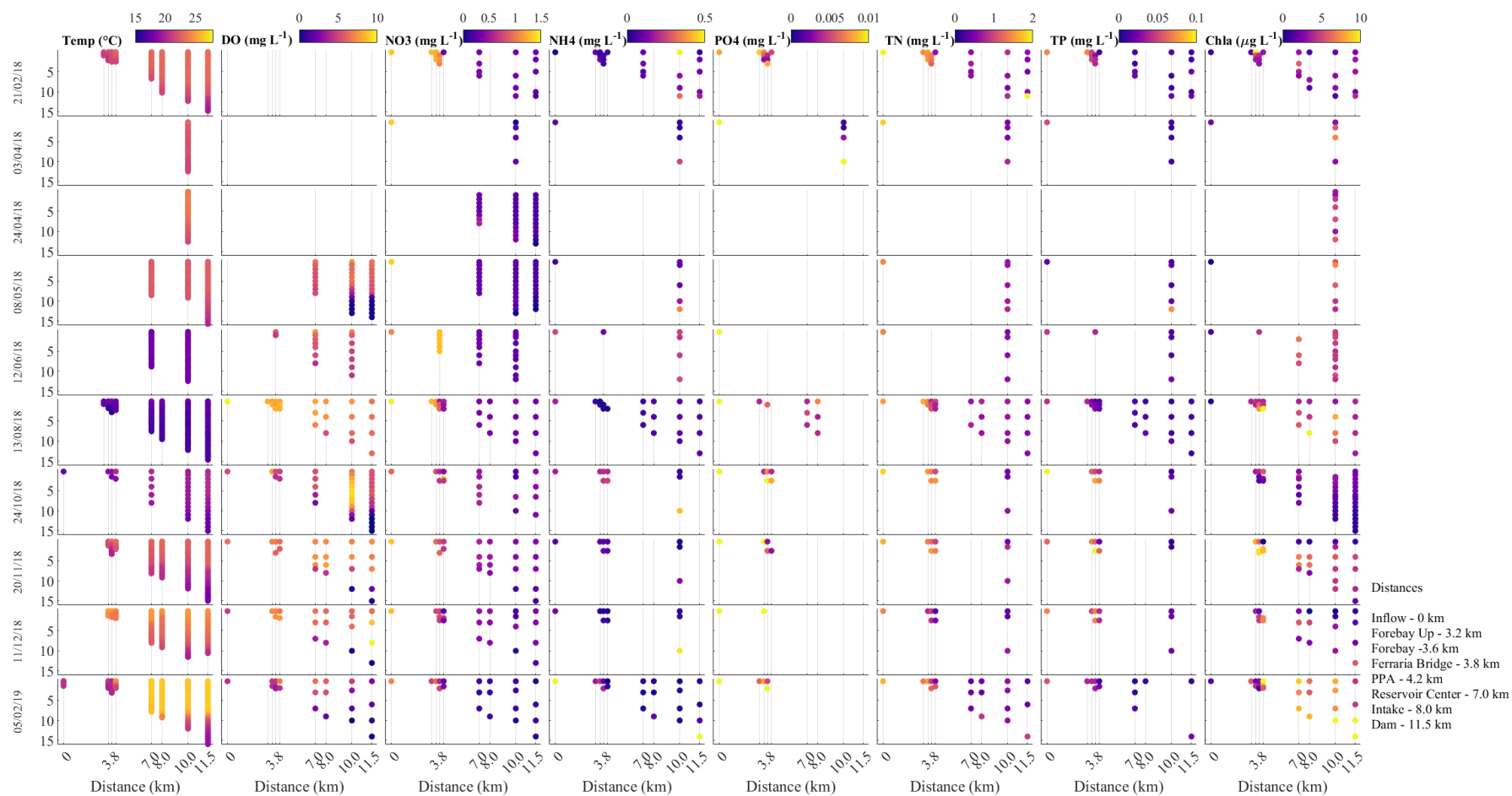
Figure S3. Scatter plots of in situ measurements, each row shows data from one campaign and columns show different parameters. Color intensities represent concentrations according to the respective colorbar at the top. Each vertical line corresponds to one location, therefore x-axis is the longitudinal axis of Passaúna Reservoir presenting the distance from inflow in kilometers, and y-axis is depth in meters.
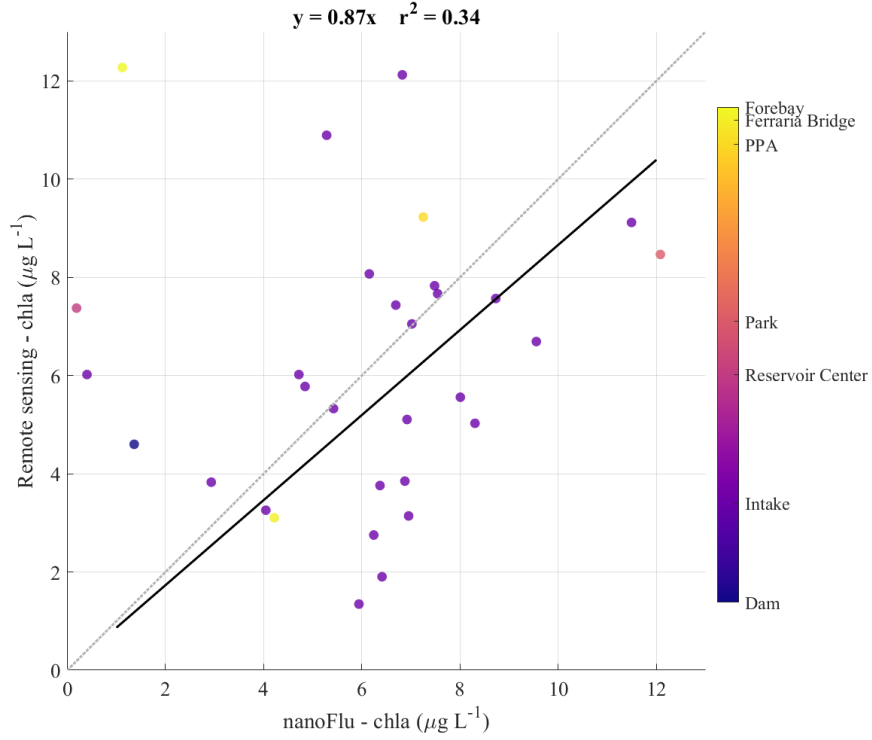
Figure S4. Chla measured by remote sensing versus in-situ measurements by a fluorescence sensor (nanoFlu) at the intake station (filled symbols, symbol color indicates the location of the measurements). The gray dotted line shows a 1:1 relationship, and the black continuous line is the linear fitting between the two data sets, angular coefficient and coefficient of determination are presented at the title.
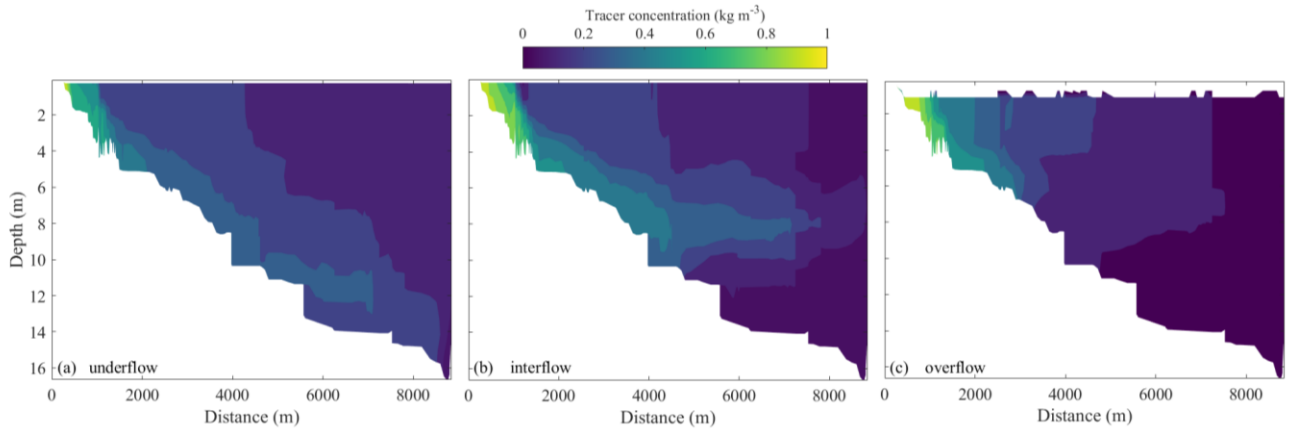
Figure S5. Contour plots of simulated tracer concentration along the longitudinal cross sectional of Passaúna Reservoir. Each pannel presents a different pattern of density currents.
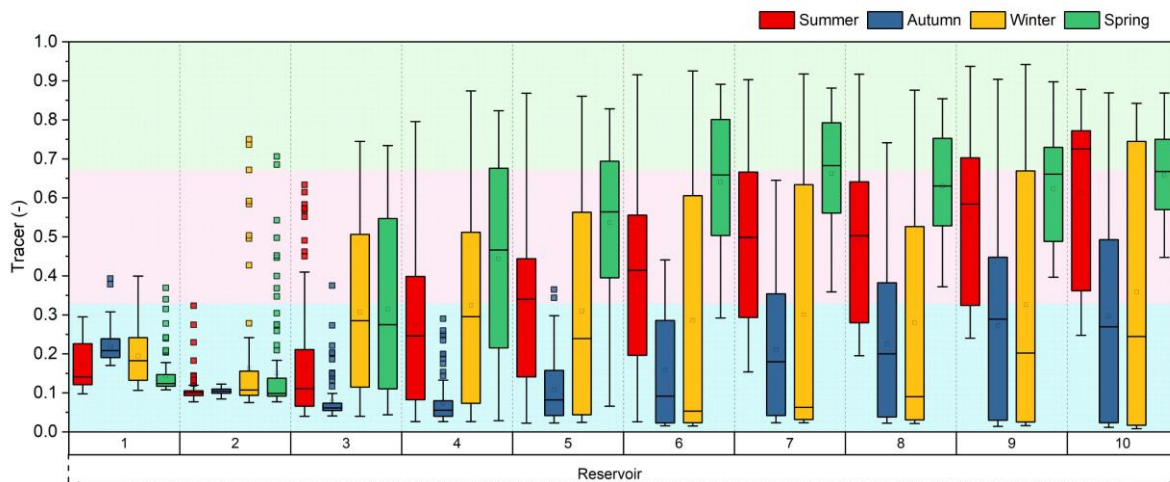
Figure S6. box plots of tracer ratio for each section according to season, see legend. Color background represents the respective flow path.

Table S2. Chla predicted by the annual average of inflow total phosphorus (0.06 mg L^{-1}) based in different linear models. Annual average of chla for all monitored points was of 4.4 µg L^{-1}, the average of the continuous measurement at the monitoring platform was of 5.2 µg L^{-1}.

Reference study	Lakes used in the study	Chla (µg L^{-1})
Dillon and Rigler [5]	19 lakes in southern Ontario	30.2
Havens and Nürnberg [4]	369 lakes from North America, Europe, Asia, and New Zealand	14.7
Phillips, *et al.* [6]	1 138 European lakes	25.0
Stow and Cha [7]	Lake Huron	5.0
Abell, *et al.* [9]	118 tropical lakes	11.4